CANADIAN JOURNAL OF FOREST RESEARCH / JOURNAL CANADIEN DE LA RECHERCHE FORESTIÈRE **VOLUME 4, 1974**

AUTHOR INDEX/RÉPERTOIRE DES AUTEURS

Adams, D. M., and Ek, A. R. Optimizing the management of uneven-aged forest stands, 274-287. Algar, D. See Weetman, G. F.

Arnott, J. T. Growth response of white-Engelmann spruce provenances to extended photoperiod using continuous and intermittent light, 69-75.

continuous and intermittent light, 69-75.

Ashley, M. See Safford, L. O.

Auclair, A. N., and Goff, F. G. Intraspecific diameter differentiation as a measure of species replacement potential, 424-434.

Auclair, A. N., See Miller, W. S.

Ballard, T. M., and Cole, D. W. Transport of nutrients to tree root systems, 563-565.

Baranyay, J. A., and Smith, R. B. Low temperature damage to dwarf mistletoe fruit, 361-365.

Baskerville, G. L. Use of logarithmic regression in the estimation of plant biomass: Reply, 149.

Black, T. A. See Tang, P. A.

Bruckerhoff, D. N. See Hinckley, T. M.

Cambell, R. A. See Durzan, D. J.

Carlson, S. D. See Kozlowski, T. T.

Cerezke, H. F. Effects of partial girdling on growth in lodgepole pine with application to damage by the

Cerezke, H. F. Effects of partial girdling on growth in lodgepole pine with application to damage by the weevil *Hylobius warreni* Wood, 312–320.

Chambers, J. L. See Hinckley, T. M. Chrosciewicz, Z. Evaluation of fire-produced seedbeds for jack pine regeneration in central Ontario, 455-457

Cobb, F. W. See Hunt, R. S. Cole, D. W. See Ballard, T. M.

Copes, D. L. Genetics of graft rejection in Douglas-fir, 186-192.

Crown, M. See Tregunna, E. B.

Dai, T. S., Haavisto, V. F., and Sparling, J. H. Water level fluctuation in a northeastern Ontario peatland,

Davies, W. J., Kozlowski, T. T., and Lee, K. J. Stomatal characteristics of *Pinus resinosa* and *Pinus strobus* in relation to transpiration and antitranspirant efficiency, 571-574.

Davies, W. J. See Kozlowski, T. T. Day, M. W. See Neary, D. G.

DeBell, D. S. See Smith, J. H. G. Demaerschalk, J. P., and Kozak, A. Suggestions and criteria for more effective regression sampling, 341-348.

Ditchburne, N. See Hillis, W. E.
Doan, G. E. See Nautiyal, J. C.
Drolet, C. A. Use of browse by white-tailed deer in an enclosure in New Brunswick, 491–498.
Durzan, D. J., and Campbell, R. A. Prospects for the mass production of improved stock of forest trees by cell and tissue culture, 151–174.

Durzan, D. J. See Mia, A. J.

Dykstra, G. F. Photosynthesis and carbon dioxide transfer resistance of lodgepole pine seedlings in relation to irradiance, temperature, and water potential, 201-206.

Eis, S. Root system morphology of western hemlock, western red cedar, and Douglas-fir, 28-38. Ek, A. R. Nonlinear models for stand table projection in northern hardwood stands, 23-27.

Ek, A. R. See Adams, D. M. Ek, A. R. See Monserud, R. A.

Endean, F. See Hocking, D.

Evans, A. K., and Reid, C. P. P. A cold temperature error in the pressure chamber technique, 413–416.

Farrell, E. P., and Leaf, A. L. Effects of fertilization and irrigation on root numbers in a red pine plantation, 366–371.

Eng. H. See Nelson E. F.

Fay, H. See Nelson, E. E.

Filip, S. M. See Safford, L. O.
Foster, N. W. Annual macroelement transfer from *Pinus banksiana* Lamb. forest to soil, 470–476.
French, D. W. See Hudler, G.
Gagnon, J. D. See Roberge, M. R.
Ginns, J. H. Rhizina root rot: severity and distribution in British Columbia, 143–146.

Goff, F. G. See Auclair, A. N. Haavisto, V. F. See Dai, T. S. Hare, R. C. Chemical and environmental treatments promoting rooting of pine cuttings, 101-106.

Hedlin, A. F. See Ruth, D. S.

Can. J. For. Res. 4, 575 (1974)

Heger, L. Longitudinal variation of specific gravity in stems of black spruce, balsam fir, and lodgepole pine, 321-326.

eger, L. Relationship between specific gravity and height in the stem of open- and forest-grown balsam fir, 477–481.

Hillis, W. E., and Ditchburne, N. The prediction of heartwood diameter in radiata pine trees, 524-529.
Hinckley, T. M., Chambers, J. L., Bruckerhoff, D. N., Roberts, J. E., and Turner, J. Effect of mid-day shading on stem diameter, xylem pressure potential, leaf surface resistance, and net assimilation rate

in a white oak sapling, 296-300.

Ho, R. H., and Owens, J. N. Microstrobilate morphology, microsporogenesis, and pollen formation in western hemlock, 509-517.

Ho, R. H., and Owens, J. N. Microstrobili of Douglas-fir, 561-562.

Hocking, D., and Endean, F. Performance after planting of four types of container-grown white spruce seedlings, 238-245

Houston, D. B. Response of selected Pinus strobus L. clones to fumigations with sulfur dioxide and ozone, 65-68

Hudler, G., Nicholls, T., French, D. W., and Warner, G. Dissemination of seeds of the eastern dwarf mistletoe by birds, 409-412.
 Hunt, R. S., Wilcox, W. W., and Cobb, F. W. Resistance of stump tops to colonization by Fomes

annosus, 140-142.

Jeglum, J. K. Relative influence of moisture-aeration and nutrients on vegetation and black spruce growth in northern Ontario, 114-126

Kliejunas, J. T., and Kuntz, J. E. Microorganisms associated with Eutypella parasitica in Acer saccharum and A. rubrum, 207-212.

Kozak, A. See Demaerschalk, J. P.

Kozlowski, T. T., Davies, W. J., and Carlson, S. D. Transpiration rates of Fraxinus americana and Acer saccharum leaves, 259–267. Kozlowski, T. T. See Davies, W. J. Kuntz, J. E. See Kliejunas, J. T.

Lachance, D. Développement de Odontia bicolor chez le sapin baumier infecté artificiellement, 327-334. Land, S. B., Jr. Depth effects and genetic influences on injury caused by artificial sea water floods to loblolly and slash pine seedlings, 179–185.

Leaf, A. L. See Farrell, E. P. Lee, K. J. See Davies, W. J.

Lee, M.J. T., and Lester, D. T. Floral receptivity in American elm, 416-417.

Lee, Y. J. Four-year basal area growth response of a 25-year-old Douglas-fir stand to thinning and urea fertilization, 568-571.

Lester, D. T. Geographic variation in leaf and twig monoterpenes of balsam fir, 55-60. Lester, D. T. See Lee, M-J. T.

Little, C. H. A. Relationship between the starch level at budbreak and current shoot growth in Abies balsamea L., 268-273

Logan, K. T. See Pollard, D. F. W.

Lowe, L. E. A sequential extraction procedure for studying the distribution of organic fractions in forest humus layers, 446-454.

Mahendrappa, M. K. Chemical composition of stemflow from some eastern Canadian tree species, 1-7. McNaughton, K. G. See Tang, P. A.

Mia, A. J., and Durzan, D. J. Cytochemical and subcellular organization of the shoot apical meristem of

Miller, W. S., and Auclair, A. N. Factor analytic models of bioclimate for Canadian forest regions, 536-548.

Monserud, R. A., and Ek, A. R. Plot edge bias in forest stand growth simulation models, 419-423. Morrison, I. K. Dry-matter and element content of roots of several natural stands of Pinus banksiana Lamb. in northern Ontario, 61-64.

Morsink, W. A. G., and Smith, V. G. Root and shoot development on cuttings of basswood (Tilia americana L.) as affected by auxin treatments and size of cuttings, 246-249.

Mullin, R. E., and Parker, J. D. Bales versus polybags in cold and frozen overwinter storage of nursery stock. 254-258.

Munro, D. D. Use of logarithmic regression in the estimation of plant biomass: Discussion, 149. Nautiyal, J. C., and Doan, G. E. Economics of forest fire control: trading planned cut for protection expenditure, 82–90.

Nautiyal, J. C. See Raizada, H. C.

Neary, D. G., Day, M. W., and Schneider, G. Snow damage to branches of young red pine stands related to plantation density, 91–96.

Nelson, E. E., and Fay, H. Thermal tolerance of *Poria weirii*, 288–290.

Nicholis, T. See Hudler, G.

O'Loughlin, C. L. A study of tree root strength deterioration following clearfelling, 107–113.

Owens, J. N. See Ho, R. H.

Parker, G. R. and Sakraddor C. Strength and Advantage of the Control of the Con

Parker, G. R., and Schneider, G. Structure and edaphic factors of an alder swamp in northern Michigan, 499-508. Parker, J. Seasonal changes in phenol-bound sugars in bark of some deciduous forest trees, 291-295.

Parker, J. D. See Mullin, R. E

Payandeh, B. Spatial pattern of trees in the major forest types of northern Ontario, 8-14.

Perala, D. A. Prescribed burning in an aspen - mixed hardwood forest, 222-228.

577

Pollard, D. F. W. Seedling size and age as factors of morphogenesis in white spruce Picea glauca (Moench) Voss buds, 97-100

Pollard, D. F. W., and Logan, K. T. The role of free growth in the differentiation of provenances of black spruce Picea mariana (Mill.) B.S.P., 308-311.

Popovich, S. Volume par unité de surface terrière, comme moyen d'évaluer la productivité de stations et la production des plantations d'épinette blanche au Québec, 127-137.

Powell, G. R. Initiation and development of lateral buds in Abies balsamea, 458-469.

Raizada, H. C., and Nautiyal, J. C. An input-output model of Ontario forest based industries, 372-380. Rehfeldt, G. E. Local differentiation of populations of Rocky Mountain Douglas-fir, 399-406.

Reid, C. P. P. See Evans, A. K.

Roberge, M. R., and Gagnon, J. D. Etude d'un épandage aérien d'urée en forêt, 482-490. Roberts, J. E. See Hinckley, T. M.

Rose, D. W. Economic implications of stocking and budworm attacks for jack pine management,

Ruth, D. S., and Hedlin, A. F. Temperature treatment of Douglas-fir seeds to control the seed chalcid Megastigmus spermotrophus Wachtl, 441-445.

Safford, L. O., and Fllip, S. M. Biomass and nutrient content of 4-year-old fertilized and unfertilized

northern hardwood stands, 549-554.

Safford, L. O., Shigo, A. L., and Ashley, M. Gradients of cation concentration in discolored and decayed wood of red maple, 435–440.

Schier, G. A. Vegetative propagation of aspen: Clonal variation in suckering from root cuttings and in rooting of sucker cuttings, 565-567.

Schneider, G. See Neary, D. G.
Schneider, G. See Parker, G. R. Schreuder, H. T., and Swank, W. T. Coniferous stands characterized with the Weibull distribution. 518-523

Scotter, G. W. Distribution of pine (Pinus spp.) in the South Nahanni and Flat Rivers region, Northwest Territories, 555-557

Sharon, E. M., and Shigo, A. L. A method for studying the relationship of wounding and microorganisms to the discoloration process in living trees, 146-148.

Shields, J. K. See Unligil, H. H. Shigo, A. L. See Safford, L. O.

Shigo, A. L. See Sharon, E. M.
Shih, M. S. H. See Ünligil, H. H.
Smith, J. H. G., and DeBell, D. S. Some effects of stand density on biomass of red alder, 335–340.

Smith, R. B. See Baranyay, J. A. Smith, V. G. See Morsink, W. A. G. Sparling, J. H. See Dai, T. S.

Sterner, T. E. Inhibition of root- and butt-decay fungi by extractives of balsam fir root wood, 213-221. Sutherland, J. R. Vertical distribution of Xiphinema bakeri nematodes in soil in a Douglas-fir nursery, 175-178

Swank, W. T. See Schreuder, H. T.

Tang, P. A., McNaughton, K. G., and Black, T. A. Inexpensive diode thermometry using integrated circuit components, 250-254. Timmis, R., and Worrall, J. Translocation of dehardening and bud-break promoters in climatically 'split' Douglas-fir, 229-237.

Tregunna, E. B., and Crown, M. Effects of environment on growth and survival of Douglas-fir trans-plants, 193-200. Tucker, T. L. Economic consequences of recycling for the Canadian newsprint industry, 15-22.

Turner, J. See Hinckley, T. M. Ünligil, H. H., Shih, M. S. H., and Shields, J. K. Airborne fungal spores at lumber seasoning yards in the lower Ottawa Valley, 301-307.

Van Sickle, G. A. Growth loss caused by a needle rust (Pucciniastrum goeppertianum) of balsam fir, 138-140.

Wang, B. S. P. A simple technique for seed transfer in X-ray analysis of seed, 407–409.
Warner, G. See Hudler, G.

Weetman, G. F., and Algar, D. Jack pine nitrogen fertilization and nutrition studies: Three year results, 381-398

White, E. H. Whole-tree harvesting depletes soil nutrients, 530-535.

Wilcox, W. W. See Hunt, R. S. Worrall, J. See Timmis, R.

Zsuffa, L. Rooting of jack pine (Pinus banksiana Lamb.) cuttings, 557-561.

CANADIAN JOURNAL OF FOREST RESEARCH / JOURNAL CANADIEN DE LA RECHERCHE FORESTIÈRE VOLUME 4, 1974

SUBJECT INDEX / RÉPERTOIRE DES SUJETS

This is a rotated term index. The terms are arranged linearly, primary terms first, followed by secondary terms after the semicolon. Each primary term is used once to head an entry. Secondary terms are informative but not sufficiently specific to head entries. In an entry, a few terms by themselves may be ambiguous, but a reading of all the terms should convey the content of the paper, as illustrated in the following examples.

cutting, *Pinus strobus*; vegetative propagation. 4, 103–107 (Walker and Ames) cutting, *Pinus strobus*; logging. 4, 567–570 (Clark et al.)

The index terms are followed by the volume number, inclusive page numbers, and author's names, in that order.

Il s'agit d'un index de termes permutés, présentés de façon linéaire: les termes principaux sont suivis, après le point-virgule, des termes secondaires. Chaque terme principal figure une fois au début d'une notice. Les termes secondaires sont utiles, mais trop peu précis pour servir de termes principaux. Il peut arriver que quelques termes d'une notice, pris isolément, soient obscurs, mais l'ensemble des termes doit préciser le contenu de l'article (voir les exemples qui suivent).

cutting, *Pinus strobus*; vegetative propagation. 4, 103–107 (Walker and Ames) cutting, *Pinus strobus*; logging. 4, 567–570 (Clark et al.)

Les termes de l'index sont suivis du numéro du volume, de la pagination complète et du nom de l'auteur ou des auteurs, dans cet ordre.

- Abies balsamea, artificial infection, moisture, Odontia bicolor; development, soil drought. 4, 327-334 (Lachance)
- budbreak, carbohydrate reserves, shoot growth; shade, transparency. 4, 268–273 (Little)
- buds; development, initiation, megasporangiate buds, microsporangiate buds. 4, 458–469 (Powell)
- fungi, root extractives; inhibition, root and butt decay. 4, 213-221 (Sterner)
- monoterpenes; gas chromatography, leaves, provenance, twigs. 4, 55-60 (Lester)
 needle rust, Pucciniastrum goeppertianum; growth loss. 4, 138-140 (Van Sickle)
- —— Picea mariana, Pinus contorta, specific gravity; longitudinal variation. 4, 321–326 (Heger)
 —— specific gravity; height, relationship. 4, 477–481 (Heger)
- acclimation, hardiness, hormonal control, Pseudostsuga menziesii; cambium, cold dormancy, dehardening, translocation of factors. 4, 229–237 (Timmis and Worrall)
- hardiness, hormonal control, *Pseudotsuga menziesii*; cambium, cold dormancy, dehardening, translocation of factors. 4, 229–237 (Timmis and Worrall)
- translocation of factors. 4, 229–257 (Timmis and Worfall)

 Acer rubrum, Acer saccharum, Eutypella parasitica, microorganisms; cankers, secondary infection. 4, 207–212 (Kliejunas and Kuntz)
- Acer saccharum, Acer rubrum, Eutypella parasitica, microorganisms; cankers, secondary infection. 4, 207-212 (Kleijunas and Kuntz)
 - —— Fraxinus americana, transpiration rates; controlled environment, electron micrographs, leaves, stomatal aperture. 4, 259–267 (Kozlowski et al.)
- Alnus rubra, biomass, stand density, yield; spacing studies, stocking, yield tables. 4, 335-340 (Smith and DeBell)

aerial spraying, urea; distribution, interception, rate, sample plotting, shape, source. 4, 482-490 (Roberge and Gagnon) alder swamp community, Alnus rogosa, drainage, Fraxinus nigra; edaphic factors. 4, 499-508 (Parker

and Schneider)

allometry, biomass, dimensional analysis; discussion, logarithmic transformation, regression, 4, 149 (Munro), 149 (Baskerville) Alnus rugosa, alder swamp community, drainage, Fraxinus nigra; edaphic factors, 4, 499-508 (Parker

and Schneider)

antitranspirant, Pinus resinosa, Pinus strobus, stomata, transpiration. 4, 571-574 (Davies et al.)

apex, cytochemistry, embryo, germination, meristem, organelles, *Pinus banksiana*; electron microscope, imbibition, tritium. 4, 39-54 (Mia and Durzan) Arceuthobium, dwarf mistletoe, frost damage, Pinus contorta, Tsuga heterophylla; seed dispersal. 4,

361-365 (Baranyay and Smith)

Arceuthobium pusillum, dwarf mistletoe, seeds; birds, dissemination. 4, 409-412 (Hudler et al.)

Arctostaphylos, Fomes annosus, Libocedrus decurrens, Quercus kelloggii, resistance; California, preformed chemicals, stump tops. 4, 140–142 (Hunt et al.) artificial infection, Abies balsamea, moisture, Odontia bicolor; development, soil drought. 4, 327-334

(Lachance)

asexual propagation, growth substances, Pinus echinata, Pinus elliottii, Pinus thunbergiana; chemical and environmental treatments. 4, 101-106 (Hare) auxin, cuttings, Tilia americana; root and shoot development, size. 4, 246-249 (Morsink and Smith)

bark, phenol-bound sugars; deciduous trees, seasonal variability, sugar concentration. 4, 291-295 (Parker)

basal area, biomass, crown profile, Weibull distribution; diameter breast height, gamma distribution, likelihood criteria, lognormal distribution, maximum likelihood estimators, normal distribution, surface area. 4, 518–523 (Schreuder and Swank) bioclimate, cluster analysis, forest regions; computer, model. 4, 536-548 (Miller and Auclair)

biogeochemical cycling, litter-fall, macroelement transfer, nutrient cycling, nutrition, *Pinus banksiana*, stemflow, throughfall. 4, 470–476 (Foster)

biomass, allometry, dimensional analysis; discussion, logarithmic transformation, regression. 4, 149

(Munro), 149 (Baskerville) - Alnus rubra, stand density, yield; spacing studies, stocking, yield tables, 4, 335-340 (Smith and

- basal area, crown profile, Weibull distribution; diameter breast height, gamma distribution, likelihood criteria, lognormal distribution, maximum likelihood estimators, normal distribution, surface area. 4, 518–523 (Schreuder and Swank) -clearcutting, fertilization, nutrients; New England, northern hardwoods. 4, 549-554 (Safford and

browsing, deer, Odocoileus virginianus borealis; damage, enclosure. 4, 491–498 (Drolet) budbreak, Abies balsamea, carbohydrate reserves, shoot growth; shade, transparency. 4, 268–273

bud formation, growth, morphogenesis, *Picea glauca*, seedling; photoperiod. 4, 97-100 (Pollard) buds, *Abies balsamea*; development, initiation, megasporangiate buds, microsporangiate buds. 4, 458-469 (Powell)

budworm, Choristoneura pinus pinus, insect control, Pinus banksiana; economic analysis, forest management, model, projections. 4, 349-360 (Rose)

carbohydrate reserves, Abies balsamea, budbreak, shoot growth; shade, transparency. 4, 268-273 (Little)

carbon dioxide, mesophyll resistance, photosynthesis, Pinus contorta; irradiance, seedlings, temperature, water potential. 4, 201-206 (Dykstra)

cell culture, mass production, tissue culture; chronological bibliography, review paper, tree improvement. 4, 151-174 (Durzan and Campbell)

chalcid, germination, Megastigmus spermotrophus, pest control, Pseudotsuga menziesii, seed moisture content, temperature; insect. 4, 441–445 (Ruth and Hedlin) chemical composition, dry matter, Pinus banksiana, roots; northern Ontario. 4, 61–64 (Morrison) stemflow; C, carbohydrate, H, minerals, N, O. 4, 1–7 (Mahendrappa)

Choristoneura pinus pinus, budworm, insect control, Pinus banksiana; economic analysis, forest management, model, projections. 4, 349–360 (Rose) clearcutting, biomass, fertilization, nutrients; New England, northern hardwoods. 4, 549-554 (Safford

and Filip)

cluster analysis, bioclimate, forest regions; computer, model. 4, 536-548 (Miller and Auclair)

principal component analysis, species replacement potential; tree diameter records. 4, 424-434 (Auclair and Goff) competition, model, plot edge bias, simulation model; growth spatial pattern. 4, 419–423 (Monserud and Ek)

container seedlings, Picea glauca; performance, planting, planting sites, seedling size, styroblocks. 4, 238-245 (Hocking and Endean)

controlled burn, fire, fire-produced seedbeds, humus, *Pinus banksiana*, regeneration; central Ontario, evaluation, post-burn humus. 4, 455-457 (Chrosciewicz)

- crown profile, basal area, biomass, Weibull distribution; diameter breast height, gamma distribution, likelihood criteria, lognormal distribution, maximum likelihood estimators, normal distribution, surface area. 4, 518-523 (Schreuder and Swank)
- cuttings, auxin, Tilia americana; root and shoot development, size. 4, 246-249 (Morsink and Smith)
 Pinus banksiana, vegetative propagation; clones, roots. 4, 557-561 (Zsuffa)
- Populus tremuloides, root suckering, vegetative propagation; adventitious roots, adventitious shoots, clonal variation. 4, 565-567 (Schier)
- cytochemistry, apex, embryo, germination, meristem, organelles, *Pinus banksiana*; electron microscope, inhibition, tritium. 4, 39-54 (Mia and Durzan)
- decay, Acer rubrum, discoloration, mineral stain. 4, 435-440 (Safford et al.)
- deer, browsing, Odocoileus virginianus borealis; damage, enclosure, 4, 491-498 (Drolet)
- density, Pinus resinosa, snow damage; branches, environmental influences, Michigan, plantations. 4, 91-96 (Neary et al.)
- dimensional analysis, allometry, biomass; discussion, logarithmic transformation, regression. 4, 149 (Munro), 149 (Baskerville)
- discoloration, Acer rubrum, decay, mineral stain. 4, 435-440 (Safford et al.)
- microorganisms, wounding; method of studying. 4, 146-148 (Sharon and Shigo)
 drainage, alder swamp community, Alnus rugosa, Fraxinus nigra; edaphic factors. 4, 499-508 (Parker and Schneider)
- dry matter, chemical composition, Pinus banksiana, roots; northern Ontario. 4, 61-64 (Morrison)
- dwarf mistletoe, Arceuthobium, frost damage, Pinus contorta, Tsuga heterophylla; seed dispersal. 4, 361-365 (Baranyay and Smith)
- Arceuthobium pusillum, seeds; birds, dissemination. 4, 409-412 (Hudler et al.)
- economics, fire control; expenditures, planned cut. 4, 82–90 (Nautiyal and Doan)
 ——forest industries, input-output; model. 4, 372–380 (Raizada and Nautiyal)
- newsprint, recycling; consumption, exports, markets, projections, supply. 4, 15-22 (Tucker) embryo, apex, cytochemistry, germination, meristem, organelles, *Pinus banksiana*; electron microscope, inhibition, tritium. 4, 39-54 (Mia and Durzan)
- Eutypella parasitica, Acer rubrum, Acer saccharum, microorganisms; cankers, secondary infection. 4, 207-212 (Klieiunas and Kuntz)
- fertilization, biomass, clearcutting, nutrients; New England, northern hardwoods. 4, 549-554 (Safford
- irrigation, Pinus resinosa, roots; New York State, root growth wood volume growth relations,
- sampling intensity, soil temperature. 4, 366-371 (Farrell and Leaf) nutrition, Pinus banksiana; even-aged stand, Mount Tremblant Park (P.Q.), needle weight, nitrogen source. 4, 381-398 (Weetman and Algar)
- Pseudotsuga menziesii, thinning, urea; basal area, fall application, growth, mortality, spring application, volume. 4, 568-571 (Lee)
- fire, controlled burn, fire-produced seedbeds, humus, Pinus banksiana, regeneration; central Ontario, evaluation, post-burn humus. 4, 455-457 (Chrosciewicz)
- fire control, economics; expenditures, planned cut. 4, 82-90 (Nautiyal and Doan)
- fire ecology, Populus tremuloides, prescribed burning, suckering; clearcutting, fire energy, Minnesota, productivity, site preparation. 4, 222-228 (Perala) fire-produced seedbeds, controlled burn, fire, humus, Pinus banksiana, regeneration; central Ontario, evaluation, post-burn humus. 4, 455-457 (Chrosciewicz)
- flood injury, genetic variation, *Pinus elliottii*, *Pinus taeda*; needle ion content, needle water potential, sea water. 4, 179–185 (Land)
- floral receptivity, pollination, Ulmus americana. 4, 416-417 (Lee and Lester)
- Fomes annosus, Arctostaphylos, Libocedrus decurrens, Quercus kelloggii, resistance; California, preformed chemicals, stump tops. 4, 140-142 (Hunt et al.)
- forest floor, fulvic acids, humic acids, lipids, polysaccharide fractionation; extraction procedure. 4, 446-454 (Lowe)
- forest industries, economics, input-output; model. 4, 372-380 (Raizada and Nautiyal)
- forest regions, bioclimate, cluster analysis; computer, model. 4, 536-548 (Miller and Auclair)
- form quotient, Picea glauca, productivity, site quality; basal area. 4, 127-137 (Popovich)
- Fraxinus americana, Acer saccharum, transpiration rates; controlled environment, electron micrographs, leaves, stomatal aperture. 4, 259-267 (Kozlowski et al.)
- Fraxinus nigra, alder swamp community, Alnus rugosa, drainage; edaphic factors. 4, 499-508 (Parker and Schneider)
- free growth, needle development, Picea mariana, provenances; photoperiod, seedlings. 4, 308-311 (Pollard and Logan)
- frost damage, Arceuthobium, dwarf mistletoe, Pinus contorta, Tsuga heterophylla; seed dispersal. 4, 361-365 (Baranyay and Smith)
 fulvic acids, forest floor, humic acids, lipids, polysaccharide fractionation; extraction procedure. 4, 446-454 (Lowe)
- fungal spores, fungal stains, lumber stain; causes and remedies, differential distribution, seasoning yards. 4, 301-307 (Unligit et al.)

fungal stains, fungal spores, lumber stain; causes and remedies, differential distribution, seasoning yards. 4, 301-307 (Unligil et al.)

fungl, Abies balsamea, root extractives; inhibition, root and butt decay. 4, 213-221 (Sterner)

genetics, grafting, Pseudotsuga menziesii; clones, heritability, incompatibility, rejection. 4, 186-192

genetic variances, population differentiation, Pseudotsuga menziesii; canonical analysis, ecological genetics, half-sibs, Idaho, population structure. 4, 399-406 (Rehfeldt)

genetic variation, flood injury, Pinus elliottii, Pinus taeda; needle ion content, needle water potential, sea water. 4, 179-185 (Land)

germination, apex, cytochemistry, embryo, meristem, organelles, *Pinus banksiana*; electron microscope, inhibition, tritium. 4, 39-54 (Mia and Durzan) — chalcid, Megastigmus spermotrophus, pest control, Pseudotsuga menziesii, seed moisture content, temperature: insect. 4. 441–445 (Ruth and Hedlin)

girdling, Hylobius warreni, leader growth, Pinus contorta, radial increment. 4, 312-320 (Cerezke) grafting, genetics, Pseudotsuga menziesii; clones, heritability, incompatibility, rejection. 4, 186-192 (Copes) growth, bud formation, morphogenesis, *Picea glauca*, seedling; photoperiod. 4, 97-100 (Pollard)

growth prediction, models, stand tables; northern hardwoods. 4, 23-27 (Ek)

growth response, photoperiod, *Picea engelmannii*, *Picea glauca*, provenances; British Columbia, container nurseries, continuous and intermittent light. 4, 69-75 (Arnott)

growth substances, asexual propagation, Pinus echinata, Pinus elliottii, Pinus thunbergiana; chemical and environmental treatments. 4, 101-106 (Hare)

hardiness, acclimation, hormonal control, Pseudotsuga menziesii; cambium, cold dormancy, dehardening, translocation of factors. 4, 229–237 (Timmis and Worrall) heartwood prediction, Pinus radiata; age, Australia, heartwood volume and diameter, regression. 4, 524-529 (Hillis and Ditchburne)

hormonal control, acclimation, hardiness, Pseudotsuga menziesii; cambium, cold dormancy, dehardening, translocation of factors, 4, 229-237 (Timmis and Worrall)

humic acids, forest floor, fulvic acids, lipids, polysaccharide fractionation; extraction procedure. 4,

446-454 (Lowe) humus, controlled burn, fire, fire-produced seedbeds, Pinus banksiana, regeneration; central Ontario, evaluation, post-burn humus, 4, 455-457 (Chrosciewicz)

hybrids, Pinus banksiana, Pinus contorta, range extension; Northwest Territories. 4,555-557 (Scotter) Hylobius warreni, girdling, leader growth, Pinus contorta, radial increment. 4, 312-320 (Cerezke)

input-output, economics, forest industries; model. 4, 372-380 (Raizada and Nautiyal) insect control, budworm, Choristoneura pinus pinus, Pinus banksiana; economic analysis, forest management, model, projections. 4, 349-360 (Rose)

irrigation, fertilization, Pinus resinosa, roots; New York State, root growth - wood volume growth relations, sampling intensity, soil temperature. 4, 366-371 (Farrell and Leaf)

leader growth, girdling, Hylobius warreni, Pinus contorta, radial increment. 4, 312–320 (Cerezke) leaf surface resistance, net assimilation rate, Quercus alba, shading, stem diameter, water potential. 4, 296–300 (Hinckley et al.)

Libocedrus decurrens, Arctostaphylos, Fomes annosus, Quercus kelloggii, resistance; California, preformed chemicals, stump tops. 4, 140–142 (Hunt et al.)

lipids, forest foor, fulvic acids, humic acids, polysaccharide fractionation; extraction procedure. 4,

-454 (Lowe)

litter-fall, biogeochemical cycling, macroelement transfer, nutrient cycling, nutrition, Pinus banksiana, stemflow, throughfall. 4, 470-476 (Foster)

log types, peatland, water levels; drainage, northern Ontario, precipitation. 4, 76-81 (Dai et al.) lumber stain, fungal spores, fungal stains; causes and remedies, differential distribution, seasoning yards. 4, 301-307 (Unligil et al.)

macroelement transfer, biogeochemical cycling, litter-fall, nutrient cycling, nutrition, *Pinus banksiana*, stemflow, throughfall. 4, 470-476 (Foster) management, optimization; cutting schedule, growth model, stand structure, uneven-aged forests. 4,

274-287 (Adams and Ek)

mass production, cell culture, tissue culture; chronological bibliography, review paper, tree improvement. 4, 151-174 (Durzan and Campbell)

Megastigmus spermotrophus, chalcid, germination, pest control, Pseudotsuga menziesii, seed moisture content, temperature; insect. 4, 441–445 (Ruth and Hedlin)
meristem, apex, cytochemistry, embryo, germination, organelles, Pinus banksiana; electron microscope, inhibition, tritium. 4, 39–54 (Mia and Durzan) mesophyll resistance, carbon dioxide, photosynthesis, Pinus contorta; irradiance, seedlings, tempera-

ture, water potential. 4, 201-206 (Dykstra)

microorganisms, Acer rubrum, Acer saccharum, Eutypella parasitica; cankers, secondary infection. 4, 207-212 (Kliejunas and Kuntz)

discoloration, wounding; method of studying. 4, 146-148 (Sharon and Shigo)

microstrobili, pollen, Pseudotsuga menziesii; microsporangia, microsporophylls. 4, 561-562 (Ho and Owens)

— pollen, Tsuga heterophylla; meiosis, microsporangia, microsporophylls, morphology. 4, 509-517 (Ho and Owens) mineral nutrition, nutrients, Populus deltoides, site degradation, whole-tree harvesting; Alabama. 4,

530-535 (White)

mineral stain, Acer rubrum, decay, discoloration. 4, 435-440 (Safford et al.) model, competition, plot edge bias, simulation model; growth spatial pattern. 4, 419-423 (Monserud and

growth prediction, stand tables; northern hardwoods. 4, 23-27 (Ek)

moisture, Abies balsamea, artificial infection, Odontia bicolor; development, soil drought. 4, 327-334 (Lachance)

moisture-aeration, nutrients, peatland, Picea mariana; growth, northern Ontario, ordination, principal component analysis. 4, 114-126 (Jeglum)

monoterpenes, Abies balsamea; gas chromatography, leaves, provenance, twigs. 4, 55-60 (Lester) morphogenesis, bud formation, growth, Picea glauca, seedling; photoperiod. 4, 97-100 (Pollard)

needle development, free growth, Picea mariana, provenances; photoperiod, seedlings. 4, 308-311 (Pollard and Logan)

needle rust, Abies balsamea, Pucciniastrum goeppertianum; growth loss. 4, 138-140 (Van Sickle) nematode control, Pseudotsuga menziesii, Xiphinema bakeri; British Columbia, nematode ecology, nursery soils, vertical distribution. 4, 175-178 (Sutherland)

net assimilation rate, leaf surface resistance, Quercus alba, shading, stem diameter, water potential. 4, 296-300 (Hinckley et al.)

newsprint, economics, recycling; consumption, exports, markets, projections, supply. 4, 15-22 (Tucker)

nutrient cycling, biogeochemical cycling, litter-fall, macroelement transfer, nutrition, Pinus banksiana, stemflow, throughfall. 4, 470-476 (Foster)

nutrients, biomass, clearcutting, fertilization; New England, northern hardwoods. 4, 549-554 (Safford and Filip)

mineral nutrition, Populus deltoides, site degradation, whole-tree harvesting; Alabama. 4, 530-535 (White)

— moisture-aeration, peatland, Picea mariana; growth, northern Ontario, ordination, principal component analysis. 4, 114-126 (Jeglum)

Pseudotsuga menziesii, roots; transport in soil. 4, 563-565 (Ballard and Cole)

nutrition, biogeochemical cycling, litter-fall, macroelement transfer, nutrient cycling, *Pinus banksiana*, stemflow, throughfall. 4, 470–476 (Foster)

fertilization, Pinus banksiana; even-aged stand, Mount Tremblant Park (PQ), needle weight, nitrogen source. 4, 381-398 (Weetman and Algar)

Odocoileus virginianus borealis, browsing, deer; damage, enclosure. 4, 491-498 (Drolet)

Odontia bicolor, Abies balsamea, artificial infection, moisture; development, soil drought. 4, 327-334 (Lachance)

optimization, management; cutting schedule, growth model, stand structure, uneven-aged forests. 4, 274-287 (Adams and Ek)

organelles, apex, cytochemistry, embryo, germination, meristem, *Pinus banksiana*; electron microscope, inhibition, tritium. 4, 39-54 (Mia and Durzan)

pathology, Poria weirii, thermal tolerance. 4, 288-290 (Nelson and Fay)

- Pseudotsuga menziesii, Rhizina undulata, root rot, seedlings; British Columbia, regeneration. 4, 143-146 (Ginns)

peatland, log types, water levels; drainage, northern Ontario, precipitation. 4, 76-81 (Dai et al.)

moisture-aeration, nutrients, Picea mariana; growth, northern Ontario, ordination, principal component analysis. 4, 114-126 (Jeglum)

pest control, chalcid, germination, Megastigmus spermotrophus, Pseudotsuga menziesii, seed moisture content, temperature; insect. 4, 441–445 (Ruth and Hedlin)

phenol-bound sugars, bark; deciduous trees, seasonal variability, sugar concentration. 4, 291-295

photoperiod, growth response, Picea engelmannii, Picea glauca, provenances; British Columbia, container nurseries, continuous and intermittent light. 4, 69-75 (Arnott)

photosynthesis, carbon dioxide, mesophyll resistance, Pinus contorta; irradiance, seedlings, temperature, water potential. 4, 201-206 (Dykstra)

Picea engelmannii, growth response, photoperiod, Picea glauca, provenances; British Columbia, container nurseries, continuous and intermittent light. 4, 69-75 (Arnott) pressure chamber, water potential; low temperature effects. 4, 413-416 (Evans and Reid)

Picea glauca, bud formation, growth, morphogenesis, seedling; photoperiod. 4, 97-100 (Pollard) container seedlings; performance, planting, planting sites, seedling size, styroblocks. 4, 238-245 (Hocking and Endean)

form quotient, productivity, site quality; basal area. 4, 127-137 (Popovich) growth response, photoperiod, *Picea engelmannii*, provenances; British Columbia, container nurseries, continuous and intermittent light. 4, 69-75 (Arnott)

Pinus resinosa, Pinus strobus, seedlings, storage; bales, overwinter, planting test, polybags. 4, 254-258 (Mullin and Parker)

Picea mariana, Abies balsamea, Pinus contorta, specific gravity; longitudinal variation. 4, 321-326 (Heger) free growth, needle development, provenances; photoperiod, seedlings. 4, 308-311 (Pollard and

moisture-aeration, nutrients, peatland; growth, northern Ontario, ordination, principal component analysis. 4, 114-126 (Jeglum)

Pielou's index, spatial pattern; northern Ontario. 4, 8-14 (Payandeh)

Pinus banksiana, apex, cytochemistry, embryo, germination, meristem, organelles; electron microscope, inhibition, tritium. 4, 39-54 (Mia and Durzan) - biogeochemical cycling, litter-fall, macroelement transfer, nutrient cycling, nutrition, stemflow,

throughfall. 4, 470-476 (Foster)

budworm, Choristoneura pinus pinus, insect control; economic analysis, forest management, model, projections. 4, 349-360 (Rose)

chemical composition, dry matter, roots; northern Ontario. 4, 61-64 (Morrison)

controlled burn, fire, fire-produced seedbeds, humus, regeneration; central Ontario, evaluation, post-burn humus. 4, 455-457 (Chrosciewicz)

cuttings, vegetative propagation; clones, roots. 4, 557-561 (Zsuffa)

fertilization, nutrition; even-aged stand, Mount Tremblant Park (PQ), needle weight, nitrogen source. 4, 381-398 (Weetman and Algar)

- hybrids, Pinus contorta, range extension; Northwest Territories. 4, 555-557 (Scotter)

Pinus contorta, Abies balsamea, Picea mariana, specific gravity; longitudinal variation. 4, 321-326 (Heger) Arceuthobium, dwarf mistletoe, frost damage, Tsuga heterophylla; seed dispersal. 4, 361-365

(Baranyay and Smith) carbon dioxide, mesophyll resistance, photosynthesis; irradiance, seedlings, temperature, water

potential, 4, 201-206 (Dykstra)

girdling, Hylobius warreni, leader growth, radial increment. 4, 312-320 (Cerezke) hybrids, Pinus banksiana, range extension; Northwest Territories. 4, 555-557 (Scotter)

Pinus echinata, asexual propagation, growth substances, Pinus elliottii, Pinus thunbergiana; chemical and environmental treatments. 4, 101-106 (Hare)

Pinus elliottii, asexual propagation, growth substances, Pinus echinata, Pinus thunbergiana; chemical and environmental treatments. 4, 101-106 (Hare)

—— flood injury, genetic variation, *Pinus taeda*; needle ion content, needle water potential, sea water. 4, 179-185 (Land)

Pinus radiata, heartwood prediction; age, Australia, heartwood volume and diameter, regression. 4, 524-529 (Hillis and Ditchburne)

Pinus resinosa, antitranspirant, Pinus strobus, stomata, transpiration. 4,571-574 (Davies et al.) density, snow damage; branches, environmental influences, Michigan, plantations. 4, 91-96

(Neary et al.)

- fertilization, irrigation, roots; New York State, root growth - wood volume growth relations, sampling intensity, soil temperature. 4, 366-371 (Farrell and Leaf) Picea glauca, Pinus strobus, seedlings, storage; bales, overwinter, planting test, polybags. 4,

254-258 (Mullin and Parker)

Pinus strobus, antitranspirant, Pinus resinosa, stomata, transpiration. 4, 571-574 (Davies et al.) Picea glauca, Pinus resinosa, seedlings, storage; bales, overwinter, planting test, polybags. 4, 254-258 (Mullin and Parker)

pollution; clones, needle damage, O₃, SO₂, 4, 65-68 (Houston)

Pinus taeda, flood injury, genetic variation, Pinus elliottii; needle ion content, needle water potential, sea water. 4, 179-185 (Land)

Pinus thunbergiana, asexual propagation, growth substances, Pinus echinata, Pinus elliottii; chemical and environmental treatments. 4, 101-106 (Hare)

plot edge bias, competition, model, simulation model; growth spatial pattern. 4, 419-423 (Monserud and Ek)

pollen, microstrobili, Pseudotsuga menziesii; microsporangia, microsporophylls. 4, 561-562 (Ho and Owens)

microstrobili, Tsuga heterophylla; meiosis, microsporangia, microsporophylls, morphology. 4, 509-517 (Ho and Owens)

pollination, floral receptivity, Ulmus americana. 4, 416-417 (Lee and Lester) pollution, Pinus strobus; clones, needle damage, O3, SO2. 4, 65-68 (Houston)

polysaccharide fractionation, forest floor, fulvic acids, humic acids, lipids; extraction procedure. 4.

446-454 (Lowe) population differentiation, genetic variances, Pseudotsuga menziesii; canonical analysis, ecological genetics, half-sibs, Idaho, population structure. 4, 399-406 (Rehfeldt)

Populus deltoides, mineral nutrition, nutrients, site degradation, whole-tree harvesting; Alabama. 4, 530-535 (White) Populus tremuloides, cuttings, root suckering, vegetative propagation; adventitious roots, adventitious

shoots, clonal variation. 4, 565-567 (Schier)

fire ecology, prescribed burning, suckering; clearcutting, fire energy, Minnesota, productivity, site preparation. 4, 222-228 (Perala)

Poria weirii, pathology, thermal tolerance. 4, 288-290 (Nelson and Fay)

prescribed burning, fire ecology, Populus tremuloides, suckering; clearcutting, fire energy, Minnesota, productivity, site preparation, 4, 222-228 (Perala) sure chamber. Picea engelmannii, water potential; low temperature effects. 4, 413-416 (Evans and

principal component analysis, cluster analysis, species replacement potential; tree diameter records. 4, 424-434 (Auclair and Goff)

productivity, form quotient, *Picea glauca*, site quality; basal area. 4, 127–137 (Popovich) provenances, free growth, needle development, *Picea mariana*; photoperiod, seedlings. 4, 308–311 (Pollard and Logan) growth response, photoperiod, Picea engelmannii, Picea glauca; British Columbia. container

nurseries, continuous and intermittent light. 4, 69-75 (Arnott)

seudotsusa menziesii, acclimation, hardiness, hormonal control; cambium, cold dormancy, dehardening, translocation of factors, 4, 229-237 (Timmis and Worrall)

chalcid, germination. Megastiemus spermotrophus, pest control, seed moisture content, temperature; insect. 4, 441-445 (Ruth and Hedlin) fertilization, thinning, urea; basal area, fall application, growth, mortality, spring application, volume. 4, 568-571 (Lee)

genetics, grafting; clones, heritability, incompatibility, rejection. 4, 186-192 (Copes)

genetic variances, population differentiation; canonical analysis, ecological genetics, half-sibs, Idaho, population structure. 4, 399-406 (Rehfeldt)

microstrobili, pollen; microsporangia, microsporophylls. 4, 561-562 (Ho and Owens)
nematode control, Xiphinema bakeri; British Columbia, nematode ecology, nursery soils, vertical distribution. 4, 175-178 (Sutherland)

nutrients, roots; transport in soil. 4, 563-565 (Ballard and Cole)

pathology, Rhizing undulata, root rot, seedlings; British Columbia, regeneration, 4, 143-146 (Ginns)

root strength, soil stability, *Thuja plicata*; British Columbia, clearfelling, dead root strength, landslides, slope stability. 4, 107-113 (O'Loughlin)

root systems, *Thuja plicata*, *Tsuga heterophylla*; soil type, tree classes. 4, 28-38 (Eis)

transplants; environment, growth, storage, survival. 4, 193-200 (Tregunna and Crown)

Pucciniastrum goeppertianum, Abies balsamea, needle rust; growth loss. 4, 138-140 (Van Sickle)

Quercus alba, leaf surface resistance, net assimilation rate, shading, stem diameter, water potential. 4. 296-300 (Hinckley et al.)

Quercus kelloggii, Arctostaphylos, Fomes annosus, Libocedrus decurrens, resistance; California preformed chemicals, stump tops. 4, 140-142 (Hunt et al.)
radial increment, girdling, Hylobius warreni, leader growth, Pinus contorta. 4, 312-320 (Cerezke)

range extension, hybrids, Pinus banksiana, Pinus contorta; Northwest Territories. 4, 555-557 (Scotter) recycling, economics, newsprint; consumption, exports, markets, projections, supply. 4, 15-22 (Tucker)

regeneration, controlled burn, fire, fire-produced seedbeds, humus, *Pinus banksiana*; central Ontario, evaluation, post-burn humus, 4, 455–457 (Chrosciewicz)

regression, sampling; efficiency testing, linear regression. 4, 341–348 (Demaerschalk and Kozak)

Rhizina undulata, pathology, Pseudotsuga menziesii, root rot, seedlings; British Columbia, regeneration. 4, 143–146 (Ginns)

root extractives, Abies balsamea, fungi; inhibition, root and butt decay. 4, 213-221 (Sterner) root rot, pathology, Pseudotsuga menziesii, Rhizina undulata, seedlings; British Columbia, regenera-

tion. 4, 143-146 (Ginns)

roots, chemical composition, dry matter, Pinus banksiana; northern Ontario. 4, 61-64 (Morrison) fertilization, irrigation, Pinus resinosa; New York State, root growth - wood volume growth relations, sampling intensity, soil temperature. 4, 366-371 (Farrell and Leaf)

— nutrients, Pseudotsuga menziesii; transport in soil. 4, 563-565 (Ballard and Cole)

root strength, Pseudotsuga menziesii, soil stability, Thuja plicata; British Columbia, clearfelling, dead root strength, landslides, slope stability. 4, 107-113 (O'Loughlin)

root suckering, cuttings, Populus tremuloides, vegetative propagation; adventitious roots, adventitious shoots, clonal variation. 4, 565-567 (Schier)

root systems, Pseudotsuga menziesii, Thuja plicata, Tsuga heterophylla; soil type, tree classes. 4, 28–38 (Eis)

sampling, regression; efficiency testing, linear regression. 4, 341-348 (Demaerschalk and Kozak) seedlings, bud formation, growth, morphogenesis, Picea glauca; photoperiod. 4, 97-100 (Pollard)
 pathology, Pseudotsuga menziesii, Rhizina undulata, root rot; British Columbia, regeneration.
 4, 143-146 (Ginns)

Picea glauca, Pinus resinosa, Pinus strobus, storage; bales, overwinter, planting test, polybags. 4, 254-258 (Mullin and Parker)

seed moisture content, chalcid, germination, Megastigmus spermotrophus, pest control, Pseudotsuga menziesii, temperature; insect. 4, 441-445 (Ruth and Hedlin)

seeds, Arceuthobium pusillum, dwarf mistletoe; birds, dissemination. 4, 409-412 (Hudler et al.)

seed transfer, X-ray analysis; germination, mechanized vacuum counting plate, perforated plexiglas template, seed displacement. 4, 407-409 (Wang) making, leaf surface resistance, net assimilation rate, Quercus alba, stem diameter, water potential. 4, 296–300 (Hinckley et al.)

shoot growth, Abies balsamea, budbreak, carbohydrate reserves; shade, transparency. 4, 268-273 (Little)

simulation model, competition, model, plot edge bias; growth spatial pattern, 4, 419-423 (Monserud and

site degradation, mineral nutrition, nutrients, *Populus deltoides*, whole-tree harvesting; Alabama. 4, 530-535 (White)

site quality, form quotient, *Picea glauca*, productivity; basal area. 4, 127–137 (Popovich) snow damage, density, *Pinus resinosa*; branches, environmental influences, Michigan, plantations. 4, 91–96 (Neary et al.)

soil stability, Pseudotsuga menziesii, root strength, Thuja plicata; British Columbia, clearfelling, dead root strength, landslides, slope stability. 4, 107–113 (O'Loughlin) spatial pattern, Pielou's index; northern Ontario. 4, 8–14 (Payandeh)

species replacement potential, cluster analysis, principal component analysis; tree diameter records. 4, 424-434 (Auclair and Goff)

specific gravity, Abies balsamea; height, relationship. 4, 477-481 (Heger)
 Abies balsamea, Picea mariana, Pinus contorta; longitudinal variation. 4, 321-326 (Heger)
 stand density, Alnus rubra, biomass, yield; spacing studies, stocking, yield tables. 4, 335-340 (Smith and

stand tables, growth prediction, models; northern hardwoods. 4, 23-27 (Ek)

stem diameter, leaf surface resistance, net assimilation rate, Quercus alba, shading, water potential. 4. 296-300 (Hinckley et al.)

stomata, antitranspirant, Pinus resinosa, Pinus strobus, transpiration. 4, 571-574 (Davies et al.) storage, Picea glauca, Pinus resinosa, Pinus strobus, seedlings; bales, overwinter, planting test, polybags. 4, 254-258 (Mullin and Parker)

suckering, fire ecology, Populus tremuloides, prescribed burning; clearcutting, fire energy, Minnesota, productivity, site preparation. 4, 222-228 (Perala)

temperature, chalcid, germination, Megastigmus spermotrophus, pest control, Pseudotsuga menziesii, seed moisture content; insect. 4, 441–445 (Ruth and Hedlin)

thermal tolerance, pathology, *Poria weirii*. 4, 288–290 (Nelson and Fay) thermometry, integrated circuit components, silicon diode. 4, 250–254 (Tang et al.)

thinning, fertilization, Pseudotsuga menziesii, urea; basal area, fall application, growth, mortality, spring application, volume. 4, 568-571 (Lee)
throughfall, biogeochemical cycling, litter-fall, macroelement transfer, nutrient cycling, nutrition, Pinus banksiana, stemflow. 4, 470-476 (Foster)

Thuja plicata, Pseudotsuga menziesii, root strength, soil stability; British Columbia, clearfelling, dead root strength, landslides, slope stability. 4, 107-113 (O'Loughlin)

- Pseudotsuga menziesii, root systems, Tsuga heterophylla; soil type, tree classes. 4, 28-38 (Eis) Tilia americana, auxin, cuttings; root and shoot development, size. 4, 246-249 (Morsink and Smith) tissue culture, cell culture, mass production; chronological bibliography, review paper, tree improvement. 4, 151-174 (Durzan and Campbell)

transpiration, antitranspirant, Pinus resinosa, Pinus strobus, stomata, 4, 571-574 (Davies et al.) transpiration rates, Acer saccharum, Fraxinus americana; controlled environment, electron micrographs, leaves, stomatal aperture. 4, 259–267 (Kozlowski et al.) transplants, Pseudotsuga menziesii; environment, growth, storage, survival. 4, 193-200 (Tregunna and

Crown)

Tsuga heterophylla, Arceuthobium, dwarf mistletoe, frost damage, Pinus contorta; seed dispersal. 4, 361-365 (Baranyay and Smith)

microstrobili, pollen; meiosis, microsporangia, microsporophylls, morphology. 4, 509-517 (Ho

- Pseudotsuga menziesii, root systems, Thuja plicata; soil type, tree classes, 4, 28-38 (Eis)

Ulmus americana, floral receptivity, pollination. 4, 416-417 (Lee and Lester)

urea, aerial spraying; distribution interception, rate, sample plotting, shape, source. 4, 482-490 (Roberge and Gagnon)

fertilization, Pseudotsuga menziesii, thinning; basal area, fall application, growth, mortality, spring application, volume. 4, 568-571 (Lee)

vegetative propagation, cuttings, *Pinus banksiana*; clones, roots. 4, 557-561 (Zsuffa) vegetative propagation, cuttings, *Populus tremuloides*, root suckering; adventitious roots, adventitious shoots, clonal variation. 4, 565-567 (Schier)

water levels, log types, peatland; drainage, northern Ontario, precipitation. 4, 76–81 (Dai et al.) water potential, leaf surface resistance, net assimilation rate, Quercus alba, shading, stem diameter. 4, 296–300 (Hinckley et al.)

Weibull distribution, basal area, biomass, crown profile; diameter breast height, gamma distribution, likelihood criteria, lognormal distribution, maximum likelihood estimators, normal distribution, surface area. 4, 518–523 (Schreuder and Swank)

whole-tree harvesting, mineral nutrition, nutrients, Populus deltoides, site degradation; Alabama. 4, 530-535 (White)

wounding, discoloration, microorganisms; method of studying. 4, 146-148 (Sharon and Shigo)

Xiphinema bakeri, nematode control, Pseudotsuga menziesii; British Columbia, nematode ecology, nursery soils, vertical distribution. 4, 175-178 (Sutherland)

X-ray analysis, seed transfer; germination, mechanized vacuum counting plate, perforated plexiglas template, seed displacement. 4, 407-409 (Wang)

yield, Alnus rubra, biomass, stand density; spacing studies, stocking, yield tables. 4, 335-340 (Smith and DeBell)

